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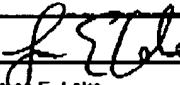
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Application Number  
09/810,387Filing Date  
March 15, 2001First Named Inventor  
Craig M. CarpenterArt Unit  
1763Examiner Name  
R. ZervigonAttorney Docket Number  
MI22-1559

## ENCLOSURES (Check all that apply)

<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached  <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s)  <input type="checkbox"/> Extension of Time Request  <input type="checkbox"/> Express Abandonment Request  <input type="checkbox"/> Information Disclosure Statement  <input type="checkbox"/> Certified Copy of Priority Document(s)  <input type="checkbox"/> Reply to Missing Parts/ Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers  <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address  <input type="checkbox"/> Terminal Disclaimer  <input type="checkbox"/> Request for Refund  <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC  <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information  <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Remarks Customer No. 021587  The Commissioner is hereby authorized to charge any fees under 37 C.F.R. 1.16 and 1.17 which may be required by this paper to Deposit Account No. 23-0925.		

## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Wells St. John P.S.		
Signature			
Printed name	James E. Lake		
Date	05 Sep 2006	Reg. No.	44,854

## CERTIFICATE OF TRANSMISSION/MAILING

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		Faxed to (571)273-8300	
Typed or printed name	James E. Lake		Date 05 Sep 2006

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Effective on 12/08/2004.  
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).**FEE TRANSMITTAL  
For FY 2005** Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT** (\$ 500.00)**Complete If Known**

Application Number	09/810,387
Filing Date	March 15, 2001
First Named Inventor	Craig M. Carpenter
Examiner Name	R. Zervigon
Art Unit	1763
Attorney Docket No.	MI22-1559

**METHOD OF PAYMENT** (check all that apply)

Check  Credit Card  Money Order  None  Other (please identify): \_\_\_\_\_

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**FEE CALCULATION****1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity	Fee (\$)	Small Entity	Fee (\$)	Small Entity	
Utility	300	150	500	250	200	100	0
Design	200	100	100	50	130	65	0
Plant	200	100	300	150	160	80	0
Reissue	300	150	500	250	600	300	0
Provisional	200	100	0	0	0	0	0

**2. EXCESS CLAIM FEES**Fee Description

Each claim over 20 (including Reissues)

Small Entity

Fee (\$)

Fee (\$)

Each independent claim over 3 (including Reissues)

50

25

Multiple dependent claims

200

100

360

180

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Small Entity
- 20 or HP =	x	=	0	Fee (\$)

HP = highest number of total claims paid for, if greater than 20.

Multiple Dependent Claims

Fee (\$)

Fee Paid (\$)

Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Small Entity
- 3 or HP =	x	=	0	Fee (\$)

HP = highest number of independent claims paid for, if greater than 3.

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(c)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
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- 100 =	/ 50 =	(round up to a whole number) x	=	0
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**4. OTHER FEE(S)**

Non-English Specification, \$130 fee (no small entity discount)

Fees Paid (\$)

0

Other (e.g., late filing surcharge): Brief in Support of an Appeal

500.00

**SUBMITTED BY**

Signature		Registration No. (Attorney/Agent) 44,854	Telephone (509) 624-4276
Name (Print/Type)	James E. Lake	Date 05 Sep 2006	

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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SEP 05 2006

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application Serial No. .... 09/810,387  
 Confirmation No. .... 8779  
 Filing Date .... March 15, 2001  
 Inventor .... Craig M. Carpenter  
 Assignee .... Micron Technology, Inc.  
 Group Art Unit .... 1763  
 Examiner .... R. Zervigon  
 Attorney's Docket No. .... MI22-1559  
 Customer No. .... 021567  
 Title: .... Chemical Vapor Deposition Apparatuses and Deposition Methods

**BRIEF OF APPELLANT**

To: Mail Stop Appeal Brief-Patents  
 Commissioner for Patents  
 P.O. Box 1450  
 Alexandria, VA 22313-1450

From: James E. Lake (Tel. 509-624-4276; Fax 509-838-3424)  
 Wells St. John P.S.  
 601 W. First Avenue, Suite 1300  
 Spokane, WA 99201-3828

Appellant appeals from the March 27, 2006 Office Action finally rejecting claims 1-29, 37, 38, 40-44, and 46. A check is included in the amount of \$500.00 in payment of the fees required under 37 C.F.R. § 41.20(b)(2).

09/07/2006 EFLORES 00000144 230925 09810387

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## I. REAL PARTY IN INTEREST

The real party in interest of the application is Micron Technology, Inc. as evidence by the assignment of the priority application to such party recorded at reel 011632, frame 0203-0212 on March 15, 2001 in the Assignment branch of the Patent and Trademark Office.

## II. RELATED APPEALS AND INTERFERENCES

Appellant, Appellant's undersigned legal representative, and the assignee of the pending application are not aware of any appeals, interferences, or judicial proceedings which may be related to, directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

## III. STATUS OF CLAIMS

Claims 1-29, 37, 38, 40-44, and 46 are pending in the application with claims 30-36, 39, and 45, previously cancelled. Claims 1-29, 37, 38, 40-44, and 46 stand finally rejected and are being appealed.

## IV. STATUS OF AMENDMENTS

Appellant did not file any amendment subsequent to final rejection.

## V. SUMMARY OF THE CLAIMED SUBJECT MATTER

A concise explanation of the subject matter defined in each of the independent claims involved in the appeal follows.

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Independent claim 1 sets forth a CVD apparatus (page 9, lines 5-13; Fig. 1) including, among other features, a valve body having an entirety of a seat within the chamber lid or body thickness between the innermost and outermost surfaces of the chamber lid or body, the seat forming a part of the chamber lid or body (page 10, line 17 to page 11, line 5; page 12, lines 3-6 and 12-19; page 13, lines 7-19; Figs. 2 and 3).

Independent claim 9 sets forth a CVD apparatus (page 9, lines 5-13; Fig. 1) including, among other features, a deposition chamber having a lid integral to a process chemical isolation mechanism such that the isolation mechanism would be incomplete, nonfunctional, or otherwise not able to isolated material delivery from reaching the chamber absent the lid (page 6, line 15 to page 7, line 17; page 8, lines 1-4; page 8, line 20 to page 9, line 4; Figs. 2 and 3).

Independent claim 15 sets forth a CVD apparatus (page 9, lines 5-13; Fig. 1) including, among other features, a deposition chamber defined in part by a cylindrical body and a single-piece, removable lid having a thickness which is much less than a width of the lid and which is similar to a thickness of the chamber body, and a valve body including a portion of the lid as part of the valve body (page 11, line 13 to page 12, line 19; page 13, line 7 to page 14, line 3; Figs. 2 and 3).

Independent claim 27 sets forth a CVD apparatus (page 9, lines 5-13; Fig. 1) including, among other features, a deposition chamber having a lid and a body with similar thicknesses, the lid having an inner surface inside the chamber, an outer surface outside the chamber, and an opening completely

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through the lid thickness and defined by sidewalls forming a part of the lid and extending between the inner and outer surfaces (page 14, lines 13-21; page 12, lines 3-11; page 13, lines 7-11; Figs. 2 and 3). The apparatus includes a valve body having a housing and a seat. At least a part of the housing includes at least a part of the outer surface of the lid, at least a part of the opening sidewalls of the lid, or both (Id.; page 12, lines 12-19; page 13, lines 11-19). At least a part of the seat includes at least a part of the inner surface of the lid, at least a part of the opening sidewalls of the lid, or both (Id.).

Independent claim 41 sets forth a CVD apparatus (page 9, lines 5-13; Fig. 1) that includes, among other features, a deposition chamber defined in part by a chamber body and a single-piece removable lid and a valve body including a portion of the lid as part of the valve body. The lid has a thickness which is much less than a width of the lid, which is similar to a thickness of the chamber body (page 11, line 13 to page 12, line 19; page 13, line 7 to page 14, line 3; Figs. 2 and 3).

Independent claim 44 sets forth a CVD apparatus (page 9, lines 5-13; Fig. 1) that includes, among other features, a deposition chamber with a cylindrical body and a matching circular lid, an opening formed through a thickness of lid, the opening defining at least a part of a valve seat (page 10, line 17 to page 11, line 5; page 12, lines 3-6 and 12-19; page 13, lines 7-19; Figs. 2 and 3), and a distribution showerhead positioned to receive deposition gas from the opening (original Fig. 1; amended Fig. 1; amended paragraph beginning at page 9, line 14).

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Independent claim 46 sets forth a CVD apparatus (page 9, lines 5-13; Fig. 1) that includes, among other features, a deposition chamber defined in part by a cylindrical body and a single piece removable lid (page 11, line 13 to page 12, line 19; page 13, line 7 to page 14, line 3; Figs. 2 and 3), an opening completely through the lid, and a valve assembly to which the lid is integral (page 6, line 15 to page 7, line 17; page 8, lines 1-4; page 8, line 20 to page 9, line 4; Figs. 2 and 3). The lid has a thickness which is much less than a width of the lid and which is similar to a thickness of the body (Id.). The body and lid thicknesses are selected to accommodate pressures associated with atomic layer deposition (Id.).

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL.**

Whether the specification enables the subject matter of claim 44 under 35 U.S.C. 112, first paragraph.

Whether the Response to December 21, 2004 Office Action filed on April 21, 2005 introduced new matter under 35 U.S.C. 132.

Whether claims 41, 42, and 46 are anticipated under 35 U.S.C. 102(b) over U.S. Patent No. 4,747,367 issued to Posa (hereinafter Posa) or are unpatentable under 35 U.S.C. 103(a) over Posa.

Whether claim 43 is obvious under 35 U.S.C. 103(a) over Posa in view of U.S. Patent No. 5,002,928 issued to Fukui (hereinafter Fukui).

Whether claims 1, 2, 4-23, 25-29, and 46 are anticipated under 35 U.S.C. 102(b) over Fukui or obvious under 35 U.S.C. 103(a) over Fukui.

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Whether claims 3 and 37-40 are unpatentable under 35 U.S.C. 103(a) over Fukui.

Whether claim 24 is unpatentable under 35 U.S.C. 103(a) over Fukui in view of U.S. Patent No. 4,319,373 issued to Waterfield (hereinafter Waterfield).

Whether claim 44 is unpatentable under 35 U.S.C. 103(a) over Fukui in view of U.S. Patent No. 5,853,484 issued to Jeong (hereinafter Jeong).

## VII. ARGUMENT

### ***A. Rejection of claim 44 under 35 U.S.C. 112, first paragraph, regarding enablement.***

Page 2 of the March 27, 2006 Office Action (hereinafter "Office Action") states that claim 44 is rejected as allegedly containing subject matter not described in the specification sufficiently to enable those of ordinary skill to make the invention. Specifically, the Office Action alleges that the specification does not describe the claimed "distribution showerhead positioned to receive deposition gas from the opening when the valve assembly is in an open position."

Appellant notes that Fig. 1 of the original specification shows a deposition chamber 84 with a process chemical opening 89 through which process chemical 102 is delivered to deposition chamber 84. A number of arrow lines in original Fig. 1 show distribution of process chemical 102 within deposition chamber 84 and subsequent flow patterns through deposition chamber 84. The specification does not expressly state what means is used to accomplish the distribution of process chemical 102 shown in Fig. 1.

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Compliance with 35 U.S.C. 112, first paragraph does not require enablement of a "perfected, commercially viable embodiment." CFMT, Inc. v. Yieldup Int'l. Corp., 349 F.3d 1333, 1338, 68 USPQ2d 1940, 1944 (Fed. Cir. 2003); MPEP § 2164. Instead, "the statement of a new limitation in and of itself may enable one skilled in the art to make and use the claim containing that limitation even though that limitation may not be described in the original disclosure." MPEP § 2164. In other words, no requirement exists to disclose conventional subject matter already known to those of ordinary skill.

In the discussion regarding Jeong, page 11 of the Office Action affirms that distribution showerheads in CVD apparatuses are very well known to those of ordinary skill. In addition, Appellant notes that U.S. Patent Publication 2004/0083959 published May 6, 2004 (hereinafter "Carpenter") shows a deposition chamber apparatus 2 in Figs. 1 and 4 with very similar features flow patterns, and distribution of process gases 14 in comparison to the present specification. Paragraph 30 of Carpenter states,

"the exemplary Figures shown herein show a single process chemical inlet to a chamber for the sake of simplicity. However, a 'showerhead' arrangement of multiple inlets or other apparatuses for distributing process chemicals over a substrate can be suitable. In summary, any deposition chamber, substrate holder, or process chemical inlet known to those skilled in the art" may be used.

Those of ordinary skill, who are per se considered to be familiar with the teachings of Jeong and Carpenter, would readily appreciate how to make the CVD apparatus set forth in claim 44 with a distribution showerhead. Those of

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ordinary skill were clearly enabled by the original specification to provide the claimed CVD apparatus given the wide recognition of distribution showerheads in the art and the further disclosure of the original specification. Appellant requests withdrawal of the lack of enablement rejection.

***B. Objection to the specification under 35 U.S.C. 132.***

Initially, Appellant introduced new claim 44 in the Response to May 27, 2004 Office Action filed on September 27, 2004. The subsequent Office Action of December 21, 2004 required that the claimed "showerhead" be included in the drawings. Accordingly, Appellant obliged the Office in the Response to December 21, 2004 Office Action by amending the drawings and including an amendment to the text of the specification merely describing in words optional distribution showerhead 104 in Fig. 1. Appellant notes that the addition of optional distribution showerhead 104 does not revise the arrow lines present in original Fig. 1 showing distribution of process chemical 102.

In a sense, Appellant's amendment to the drawings and specification merely corrects the absence of conventional details or adds conventional subject matter that may be considered inherent. Amendments correcting obvious errors do not constitute new matter where those of ordinary skill recognize the existence of error as well as the appropriate correction. In re Odd, 443 F.2d 1200, 170 USPQ 268 (CCPA 1971); MPEP § 2163.07(II). Similarly, a patent application disclosing a device that inherently possesses a certain property necessarily discloses such property even though the

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application says nothing explicit concerning it. Subsequent amendment to recite such property may be accomplished without introducing prohibited new matter. In re Reynolds, 443 F.2d 384, 170 USPQ 94 (CCPA 1971); MPEP § 2163.07(a).

Since original Fig. 1 shows distribution of process chemical 102 within deposition chamber 84, those of ordinary skill would appreciate that an option necessarily exists to accomplish the distribution shown in Fig. 1 using a conventional, optional distribution showerhead 104 shown in amended Fig. 1 and expressly described by amendment to the original specification. At least Jeong and/or Carpenter discussed above establish that those of ordinary skill recognize the missing descriptive matter is necessarily present and that an inherent option exists to use a conventional distribution showerhead. Accordingly, regardless of Appellant's failure to expressly describe distribution showerhead 104 in the original specification and drawings, Appellant's addition of such feature does not constitute new matter.

***C. Rejection under 35 U.S.C. 102(b) or 103(a) over Posa or over Posa in view of Fukui.***

Claim 46 sets forth a CVD apparatus that includes, among other features, a deposition chamber defined in part by a cylindrical body and a single piece removable lid, an opening completely through the lid, and a valve assembly to which the lid is integral. The lid has a thickness which is much less than a width of the lid and which is similar to a thickness of the body. The body and lid thicknesses are selected to accommodate pressures

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associated with atomic layer deposition. Pages 2-4 of the Office Action allege that claim 46 is anticipated by or obvious over Posa.

The Office does not now allege and has not previously alleged disclosure or suggestion of the claimed single-piece lid. The Office Action does not provide any mention of the claimed limitation. Such failure is understandable since review of Posa fails to reveal any disclosure or suggestion of a single-piece lid. The Office's rejection of claim 46 requires substantial evidence establishing disclosure or suggestion of every claim limitation. Accordingly, Posa does not anticipate or render obvious the subject matter of claim 46.

Further, manifold 100 in Posa describes a complex association of inlets and inlet valves operating with a process chamber and a vent chamber. No evidence exists that it is even possible to manufacture manifold 100 as a single-piece. Given the complexity of manifold 100, such manufacture seems unlikely. Regardless, the Office Action fails to support any such conclusion with substantial evidence. At least for such further reason, Posa fails to disclose or suggest every limitation of claim 46.

Also, page 4 of the Office Action acknowledges the failure of Posa to disclose or suggest the claimed lid having a thickness which is much less than a width of the lid. The lid thickness is also similar to the chamber body thickness. However, the Office Action alleges a motivation to modify Posa and optimize the relative dimensions of the lid and chamber body. If a proposed modification of the prior art would render the prior art device or process "inoperable for its intended purpose" or change the principle of

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operation of the prior art invention being modified, then no suggestion or motivation exists to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959); MPEP § 2143.01.

Notably, the alleged "lid" in Posa is manifold 100. The Office Action fails to provide substantial evidence or technical reasoning that it is possible to modify manifold 100 in the manner alleged without frustrating the intended function or changing the principal of operation of manifold 100. Absent such evidence, no motivation may be considered to exist to modify manifold 100. Given the complexity of manifold 100, the existence of such evidence seems unlikely. Accordingly, Posa fails to teach those of ordinary skill to make the claimed apparatus.

At least for the indicated reasons, Posa fails to establish *prima facie* obviousness of claim 46. As may be appreciated from the express limitations of claims 41 and 42, such claims are also patentable over Posa. Claim 43 depending from claim 41 stands rejected as being unpatentable over Posa in view of Fukui. However, Fukui does not remedy and is not alleged to remedy the above indicated deficiencies of Posa. Accordingly, claim 43 is patentable over the cited combination.

***D. Rejection under 35 U.S.C. 102(b) or 35 U.S.C. 103(a) over Fukui or Fukui in view of Waterfield.***

Claim 1 sets forth a CVD apparatus including, among other features, a valve body having an entirety of a seat within the chamber lid or body thickness between the innermost and outermost surfaces of the chamber lid

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or body, the seat forming a part of the chamber lid or body. The Office Action alleges that fence 14 of Fukui discloses the chamber lid or body, that wave sprayer 1 discloses the valve body, and that needle valve holder 7 discloses the seat. However, needle valve holder 7 does not form part of fence 14. Needle valve holder 7 and fence 14 are separate and distinct components of the Fukui apparatus. Accordingly, claim 1 along with claims 2-8 and 37 depending therefrom are patentable over Fukui.

Claim 9 sets forth a CVD apparatus including, among other features, a deposition chamber having a lid integral to a process chemical isolation mechanism such that the isolation mechanism would be incomplete, nonfunctional, or otherwise not able to isolate material delivery from reaching the chamber absent the lid. The Office Action alleges that fence 14 of Fukui discloses the claimed lid and that hollow needle valve 6 discloses the claimed isolation mechanism. Appellant notes that fence 14 is not in any way related to isolation of feedstock in path 10 from being delivered into fence 14. Appellant also notes that fence 14 is not in any way integral to hollow needle valve 6. Accordingly, claim 9 along with claims 10-14 and 38 depending therefrom are patentable over Fukui.

Claim 15 sets forth a CVD apparatus including, among other features, a deposition chamber defined in part by a cylindrical body and a single-piece, removable lid having a thickness which is much less than a width of the lid and which is similar to a thickness of the chamber body, and a valve body including a portion of the lid as part of the valve body. The Office Action alleges that fence 14 discloses the claimed deposition chamber and that

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needle valve holder 7 or wave sprayer 1 disclose the claimed valve body. However, fence 14 of Fukui does not disclose the deposition chamber defined as in claim 15. Also, needle valve holder 7 and wave sprayer 1 do not include fence 14 as a part of the valve body. Accordingly, claim 15 along with claims 15-26 depending therefrom are patentable over Fukui.

Claim 27 set forth a CVD apparatus including, among other features, a deposition chamber having a lid and a body with similar thicknesses, the lid having an inner surface inside the chamber, an outer surface outside the chamber, and an opening completely through the lid thickness and defined by sidewalls forming a part of the lid and extending between the inner and outer surfaces. Regardless of the Office's allegation that the Fukui conduit holding hollow needle valve 6 discloses the claimed opening and that fence 14 discloses the claimed lid, the sidewalls of the conduit do not form a part of fence 14. Instead, the sidewalls form a part of needle valve holder 7. Accordingly, claim 27 along with claims 28, 29, and 40 depending therefrom are patentable over Fukui.

The subject matter of claim 46 is described above. As may be appreciated from the discussion above regarding the deficiencies of Fukui as applied to claims 1, 9, 15, and 27, Fukui also does not disclose or suggest the every limitation of claim 46.

As asserted above, the pending claims set forth express limitations for which no evidence exists of their disclosure in Fukui. The Office Action alleges that Fukui discloses the claimed limitations and refers to figures and

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text in Fukui as alleged support. However, review of the referenced figures and text fails to reveal substantial evidence in support of the allegations.

Instead, as asserted above, the Office Action ignores certain express limitations in each rejected claim such that the alleged support in Fukui amounts to, at best, an incomplete disclosure or suggestion of the claim limitations. The Office Action must consider the subject matter of each claim, taken as a whole, meaning at least every express limitation. The Office Action does not allege a motivation to modify Fukui in a manner that discloses the missing limitations discussed above. The other references relied upon do not remedy and are not alleged to remedy the deficiencies of Fukui discussed above. At least for such reasons, the references and cited combinations fail to disclose or suggest every claim limitation and the Office Action fails to establish *prima facie* obviousness.

***E. Rejection under 35 U.S.C. 103(a) over Fukui in view of Jeong.***

Claim 44 sets forth a CVD apparatus that includes, among other features, a deposition chamber with a cylindrical body and a matching circular lid, an opening formed through a thickness of lid, the opening defining at least a part of a valve seat, and a distribution showerhead positioned to receive deposition gas from the opening. Pages 10-11 of the Office Action allege that Fukui discloses every limitation of claim 44 except for the distribution showerhead and rely upon Jeong as allegedly disclosing the missing subject matter. The Office Action further alleges that needle

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valve holder 7 of Fukui discloses the claimed opening through the lid thickness.

Appellant notes that columns 3 and 4 of Fukui expressly describe the ultrasonic wave sprayer in Fig. 1 as being limited to spraying solutions. As described in column 5, the advantages of Fukui are obtained by spraying solution directly from the solution-atomizing nozzle of the ultrasonic wave sprayer to substrate 17 to provide a uniform thin film. In contrast, claim 44 sets forth a distribution showerhead to receive deposition gas from the opening through the lid. Accordingly, the Office's proposed modification is to add the Jeong gas distribution manifold 19 to Fukui such that Jeong's manifold 19 receives the solution from needle valve holder 7 and then applies it to substrate 17.

Understandably, such a modification entirely changes the method by which Fukui applies the atomized solution. Further, no evidence exists or is alleged to exist that Jeong's manifold 19 is suitable to use for creating an atomized solution and/or will still provide the advantages required by Fukui. Jeong's manifold 19 is designed to distribute gas. If a proposed modification of the prior art would render the prior art device or process "inoperable for its intended purpose" or change the principle of operation of the prior art invention being modified, then no suggestion or motivation exists to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959); MPEP § 2143.01. Accordingly, no motivation may be considered to exist to modify

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**Fukui in the manner alleged and the cited combination fails to disclose every limitation of claim 44.**

**Appellant herein establishes adequate reasons supporting patentability of claims 1-29, 37, 38, 40-44, and 46 and requests allowance of all pending claims.**

**Respectfully submitted,**

**Dated: \_\_\_\_\_ By: \_\_\_\_\_**  
**James E. Lake**  
**Reg. No. 44,854**

## VIII. CLAIMS APPENDIX.

1. (previously presented) A chemical vapor deposition apparatus comprising:

a deposition chamber defined by a chamber lid and a chamber body having similar thicknesses, the chamber lid or body having an innermost surface inside the chamber and an outermost surface outside the chamber; and

a valve body having an entirety of a seat within the chamber lid or body thickness between the innermost and outermost surfaces of the chamber lid or body, the seat forming a part of the chamber lid or body.

2. (previously presented) The apparatus of claim 1 wherein the chemical vapor deposition apparatus comprises an atomic layer deposition apparatus.

3. (previously presented) The apparatus of claim 1 wherein the seat is within the chamber lid thickness.

4. (previously presented) The apparatus of claim 1 wherein the valve body includes a portion of the chamber lid or body as at least a part of the seat.

5. (previously presented) The apparatus of claim 1 wherein the valve body comprises at least a part of a valve housing between the innermost and outermost surfaces of the chamber lid or body.

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6. (previously presented) The apparatus of claim 5 wherein the valve body includes a portion of the chamber lid or body as at least a part of the valve housing.

7. (previously presented) The apparatus of claim 1 further comprising at least a part of a process chemical inlet to the valve body between the innermost and outermost surfaces of the chamber lid or body.

8. (previously presented) The apparatus of claim 7 wherein the chamber lid or body forms at least a part of the chemical inlet.

9. (previously presented) A chemical vapor deposition apparatus comprising:

a deposition chamber having a lid and a body with similar thicknesses;  
a process chemical opening completely through the lid; and  
an isolation mechanism proximate the chemical opening and selectively isolating the deposition chamber from receiving material through the chemical opening, the lid being integral to the isolation mechanism such that the isolation mechanism would be incomplete, nonfunctional, or otherwise not able to isolate material delivery from reaching the chamber absent the lid.

10. (original) The apparatus of claim 9 wherein the chemical vapor deposition apparatus comprises an atomic layer deposition apparatus.

11. (original) The apparatus of claim 9 wherein the isolation mechanism comprises a valve.

12. (original) The apparatus of claim 11 wherein the lid comprises at least a part of a seat of the valve.

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13. (original) The apparatus of claim 11 wherein the lid comprises at least a part of a housing of the valve.

14. (original) The apparatus of claim 11 wherein the lid comprises at least a part of a process chemical inlet to the valve.

15. (previously presented) A chemical vapor deposition apparatus comprising:

a deposition chamber defined in part by a cylindrical chamber body and a single-piece, removable lid with a circumference corresponding to a shape and a size of the chamber body where it joins with the lid, the chamber body size being selected to accommodate a semiconductor wafer during CVD when such wafer is parallel to the lid, the lid having a thickness which is much less than a width of the lid and which is similar to a thickness of the chamber body, the chamber body and lid thicknesses being selected to accommodate pressures associated with atomic layer deposition; and

a valve body including a portion of the lid as part of the valve body, the valve body selectively shutting off flow of a process chemical into the chamber, adjusting the flow rate of the chemical into the chamber, or both.

16. (original) The apparatus of claim 15 wherein the chemical vapor deposition apparatus comprises an atomic layer deposition apparatus.

17. (original) The apparatus of claim 15 wherein at a 50% open position as indicated by a stem position the valve body provides a flow rate of no more than about 50% of a maximum flow rate through the valve body.

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18. (original) The apparatus of claim 15 wherein the portion of the lid comprises at least a part of a valve housing.

19. (original) The apparatus of claim 18 wherein the part of the valve housing comprised by the portion of the lid is defined by a cylindrical opening in the lid, the valve body further comprising a stem coincident with a central axis of the cylindrical opening and positioned at least partially within the cylindrical opening.

20. (original) The apparatus of claim 15 wherein the portion of the lid comprises at least a part of a valve seat.

21. (original) The apparatus of claim 20 wherein the entirety of the valve seat is between an innermost surface of the lid inside the chamber and an outermost surface of the lid outside the chamber.

22. (original) The apparatus of claim 20 wherein the valve seat comprises a plug seat or a diaphragm seat.

23. (original) The apparatus of claim 20 wherein the part of the valve seat comprised by the portion of the lid is defined by a beveled lid surface around a cylindrical opening through the lid, the valve body further comprising a plug complementary to the beveled lid surface.

24. (original) The apparatus of claim 20 wherein the part of the valve seat comprised by the portion of the lid is defined by an annular platform around a cylindrical opening through the lid, the valve body further comprising a plug and a diaphragm between the plug and annular platform.

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25. (original) The apparatus of claim 15 wherein the portion of the lid comprises at least a part of a process chemical inlet in the valve body.

26. (original) The apparatus of claim 25 wherein the apparatus further comprises a process chemical inlet through the lid to the chemical inlet in the valve body.

27. (previously presented) A chemical vapor deposition apparatus comprising:

a deposition chamber having a lid and a body with similar thicknesses, the lid having an inner surface inside the chamber, an outer surface outside the chamber, and an opening completely through the lid thickness and defined by sidewalls forming a part of the lid and extending between the inner and outer surfaces;

a valve body having a housing and a seat;

at least a part of the housing comprising at least a part of the outer surface of the lid, at least a part of the opening sidewalls of the lid, or both; and

at least a part of the seat comprising at least a part of the inner surface of the lid, at least a part of the opening sidewalls of the lid, or both.

28. (original) The apparatus of claim 27 wherein the chemical vapor deposition apparatus comprises an atomic layer deposition apparatus.

29. (original) The apparatus of claim 27 further comprising a process chemical inlet to the valve body, a lid portion between the inner surface and the outer surface forming at least a part of the chemical inlet.

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**Claims 30-36 (cancelled).**

**37. (previously presented) The apparatus of claim 1 wherein the chamber lid thickness is much less than a chamber lid width.**

**38. (previously presented) The apparatus of claim 9 wherein the chamber lid thickness is much less than a chamber lid width.**

**39. (cancelled).**

**40. (previously presented) The apparatus of claim 27 wherein the chamber lid thickness is much less than a chamber lid width.**

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**41. (previously presented) A chemical vapor deposition apparatus comprising:**

**a deposition chamber defined in part by a chamber body and a single-piece, removable lid with a circumference corresponding to a shape and a size of the chamber body where it joins with the lid, the chamber body size being selected to accommodate a semiconductor wafer during CVD when such wafer is parallel to the lid, the lid having a thickness which is much less than a width of the lid and which is similar to a thickness of the chamber body, the chamber body and lid thicknesses being selected to accommodate pressures associated with atomic layer deposition;**

**a valve body including a portion of the lid as part of the valve body, the valve body being adapted to receive external control signals selectively shutting off flow of a process chemical into the chamber, adjusting the flow rate of the chemical into the chamber, or both; and**

**a valve stem that moves inward to the chamber to allow or to increase flow of process chemical into the chamber and moves outward from the chamber to shut off or to decrease process chemical flow into the chamber.**

**42. (previously presented) The apparatus of claim 41 wherein the portion of the lid comprises at least a part of a valve seat.**

**43. (previously presented) The apparatus of claim 42 wherein the part of the valve seat comprised by the portion of the lid is defined by a beveled lid surface around a cylindrical opening through the lid, the valve body further comprising a plug complementary to the beveled lid surface.**

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**44. (previously presented) A chemical vapor deposition apparatus comprising:**

**a deposition chamber defined in part by a cylindrical body and a circular lid matched to a diameter of the cylindrical body;**

**an opening formed through a thickness of the lid, the opening defining at least a part of a valve seat;**

**a valve assembly positioned to match a valve plug or diaphragm with the valve seat; and**

**a distribution showerhead positioned to receive deposition gas from the opening when the valve assembly is in an open position.**

**45. (cancelled).**

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46. (previously presented) A chemical vapor deposition apparatus comprising:

a deposition chamber defined in part by a cylindrical body and a single-piece, removable lid with a circumference corresponding to a shape and a size of the body where it joins with the lid, the body size being selected to accommodate a semiconductor wafer during CVD when such wafer is parallel to the lid, the lid having an inner surface inside the chamber and an outer surface outside the chamber and having a thickness which is much less than a width of the lid and which is similar to a thickness of the body, the body and lid thicknesses being selected to accommodate pressures associated with atomic layer deposition;

an opening completely through the lid thickness and defined by sidewalls forming a part of the lid and extending between the inner and outer surfaces, the sidewalls having a shape that of itself defines a valve seat, the entirety of the valve seat being positioned between the inner and outer surfaces; and

a valve assembly positioned to match a valve plug or diaphragm with the valve seat making the lid integral to the valve assembly such that the valve assembly would be incomplete, nonfunctional, or otherwise not able to isolate chemical delivery from reaching the chamber absent the lid.

## IX. EVIDENCE APPENDIX.

Not applicable.

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## X. RELATED PROCEEDINGS APPENDIX.

Not applicable.